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ABSTRACT

Factors that affect enrollment, applications, and student academic achievement (high school rank and Scholastic Aptitude Test scores) at 38 private colleges and universities in North Carolina were studied, based on data obtained from the Higher Education General Information Survey and the North Carolina Higher Education Data reports. The following variables were assessed: institution size, county population and growth, area population and growth, area student percentage, area student growth, out-of-state percentage and growth, proximity to the University of North Carolina (UNC), institution age, percentage of bachelor's degrees in education awarded in 1973-1974 (education percentage) and the education growth rate, coeducational or single-sex college, the predominant race of the institution, and religious affiliation. Findings include the following: private institutions located in large population areas (600,000 or more) had a greater increase in freshman applications; institutions that enrolled a larger percentage of students in education experienced an increase in applications and enrollments (however, the quality of the students enrolled declined); the academic performance of students in institutions with larger percentages of out-of-state students declined; institutions related to the United Methodist Church showed increases in freshmen enrollments; and the newer institutions reported larger percentage increases in freshmen enrollments. (SW)

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FACTORS ASSOCIATED WITH ENROLLMENTS, APPLICATIONS, AND STUDENT QUALITY IN PRIVATE HIGHER EDUCATION

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FACTORS ASSOCIATED WITH ENROLLMENTS, APPLICATIONS, AND STUDENT QUALITY IN PRIVATE HIGHER EDUCATION

Currently, there is considerable apprehension and concern about the future of higher education in the United States as the traditional college going cohort of 18-21 year olds begins to decline. Projections indicate a 25 percent decline in this age group by about 1995 [4]. Because of the differential in tuition rates between private and public schools, many leaders of private institutions of higher education fear that their sector will bear the brunt of this anticipated enrollment decline [2].

The Carnegie Council on Policy Studies in Higher Education has suggested various factors which may influence future enrollment trends for the nation's private universities and colleges over the next two decades [5]. Some of the factors mentioned were: population trends of the area in which the institution is located, proximity to a competing low-tuition public institution, size of the institution, the sex of the institution (coed, women only, men only), and the relative concentration on teacher education programs. This study examined the effects of the above and other factors on enrollments, applications, and student quality for North Carolina's private institutions of higher education from 1974-75 through 1979-80.

Minter and Bowen have conducted the most thorough and comprehensive studies of American private higher education to date. They have published a series of five reports on the financial and educational trends of the private sector covering the period 1969-70 through 1979-80. Their most recent study [8] is based on a sample of 127 accredited private institutions stratified by Carnegie classifications. The Minter and Bowen studies are primarily descriptive; they present a status report on the private

universities and colleges in the nation as a group and by type. There is little analysis of the factors contributing to the different relative position of individual institutions. When such analysis is done, it treats financial factors. Since higher education is largely enrollment driven, factors influencing enrollment trends could possibly predict future financial status.

Cleit [6] studied a representative sample of 41 public and private institutions of higher education using the case study method and on-site interviews Focusing on financial data, Cheit found that 29 of the universities and colleges in his sample were either in financial difficulty or headed in that direction. Comprehensive studies of private higher education have been sponsored by the Carnegie Council on Policy Studies in Higher Education [4] and the Brookings Institution [2]. Other studies have focused on particular states [7, 1]. All of the aforementioned studies were primarily descriptive in approach. This study sought to determine predictive relationships among factors influencing private higher education.

Methodology

The sample for this study consisted of the 38 private institutions of higher education in the state of North Carolina. One was a research university, eight were comprehensive universities or colleges, 21 were liberal arts colleges, and eight were two-year colleges as defined by the Carnegie classification [3]. In the fall of 1979, 51,879 students were enrolled in these institutions or 29 percent of the state's total college population.

The data on each institution was obtained from the Higher Education General Information Surveys (HEGIS) and the North Carolina Higher Education

Data (NCHED) reports. Population data was provided by the North Carolina Office of Demographic Research [9].

The independent variables studied were defined as follows:

1. Institution Size. The FTE enrollment of the institution in the fall of 1974.

2. County Population. The 1974 population of the county in which the institution was located.

3. County Population Growth. The percentage change in the population of the county in which the institution was located from 1974 to 1979.

4. Area Population. The 1974 population of the county in which the institution was located plus the population of all adjacent North Carolina counties.

5. Area Population Growth. The percentage change from 1974 to 1979 in the population of the county of institutional location and adjacent North Carolina counties.

6. Area Student Percentage. The percentage of students enrolled in the institution in 1974 from the county of institutional location or an adjacent North Carolina county.

7. Area Student Growth. The change from 1974 to 1979 in the percentage of students enrolled in the institution from the county of location or an adjacent North Carolina county.

8. Out-of-State Percentage. The percentage of out-of-state students enrolled in the institution in 1974.

9. Out-of-State Growth. The change in the percentage of out-of-state students enrolled in the institution from 1974 to 1979.

10. UNC Proximity. The distance in miles between the private institution and the nearest constituent institution of The University of North Carolina.

11. Institution Age. The number of years the institution has existed.

12. Education Percentage. The percentage of bachelor's degrees in education awarded by the institution in 1973-74.

13. Education Growth. The change in the percentage of bachelor's degrees in education awarded by the institution from 1973-74 to 1978-79.

14. Coeducational. This variable had only two values for this study. An institution was either coeducational or for women only.

15. Race. The predominant race of the institution.

16. Religious Relationship. The religious denomination with which the institution was related.

The dependent variables examined in this study were as follows:

1. FTE Growth. The percentage change in the institution's FTE enrollment from the fall of 1974 to the fall of 1979.

2. Application Growth. The percentage change in the number of first-time freshman applications received by the institution from 1975 to 1980.

3. Freshman Enrollment Growth. The percentage change in the number of first-time freshmen who actually enrolled at the institution from the fall of 1975 to the fall of 1980.

4. SAT Gain. The change from 1975 to 1980 in the mean SAT scores for first-time freshmen at the institution.

5. High School Rank. The change from 1975 to 1980 in the percentage of first-time freshmen who graduated in the top 40 percent of their high school classes.

Five stepwise multiple regressions were computed for each of the five dependent variables with all 16 independent variables.[1] Five independent variables were selected for inclusion in the equation based on the respective contribution of each variable to explained variance. This procedure was used to isolate the five optimal predictor variables. An F ratio of .05 was required as a statistical criteria for inclusion in the equation. Dummy variables were used for the nominal scale variables coeducational, race and religious relationship.

These three variables were coded as follows: coeducational, coed = 1, women only = 2; race, predominantly white = 1, predominantly black = 2; religious relationship, United Methodist = 1 (N = 9), Presbyterian = 2 (N = 8), Southern Baptist = 3 (N = 7); all others = 4 (N = 14).

Results

The results of the regression analysis are presented in Table 1. The best predictors of FTE growth were area student percentage, education percentage, education growth, UNC proximity, and race. The statistically significant multiple r of .71 accounted for 50 percent of the variation in FTE growth. The UNC proximity simple correlation was negative. The dummy variable race indicated a positive correlation of .17 between FTE growth and predominantly white institutions.

The two best predictors were area student percentage (ASP) and education percentage (EP), accounting for 28 percent of the variation in FTE growth. When the 38 institutions were grouped and examined on the basis of these

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[1]All analyses employed Statistical Package for the Social Sciences (SPSS) multiple regression procedure. These analyses were conducted at the Triangle Universities Computation Center (TUCC) at the Research Triangle Park in North Carolina.

Table 1

RESULTS OF THE STEPWISE REGRESSION ANALYSIS

Dependent Variable	Independent Variables	Simple r	Multiple r	r^2	F
FTE Growth	Area Student Percentage	.43	.43	.18	5.64*
	Education Percentage	.40	.53	.28	4.74*
	Education Growth	.23	.64	.41	5.27**
	UNC Proximity	-.01	.67	.45	4.39**
	Race	.17	.71	.50	4.25**
Application Growth	Area Population	.35	.35	.12	3.56
	Education Growth	.29	.52	.27	4.54*
	Education Percentage	.07	.59	.35	4.06*
	Race	.04	.62	.38	3.50*
	Out-of-State Growth	.04	.66	.44	3.32*
Freshman Enrollment Growth	Religious Relationship (United Methodist)	.45	.45	.20	6.36*
	Institution Age	-.37	.57	.32	5.79**
	Education Growth	.45	.61	.37	4.58*
	Area Population	.04	.63	.40	3.67*
	Institution Size	-.12	.64	.41	2.93*
SAT Gain	Education Growth	-.32	.32	.10	2.77
	Race	-.31	.44	.19	2.83
	Area Student Growth	-.15	.51	.26	2.75
	Religious Relationship (Presbyterian, U.S.)	-.22	.55	.30	2.33
	County Population Growth	.19	.57	.32	1.98
High School Rank	Education Growth	-.41	.41	.17	4.50*
	Out-of-State Percentage	-.33	.59	.35	5.74*
	UNC Proximity	-.27	.66	.44	5.17**
	Religious Relationship (United Methodist)	-.30	.71	.50	4.94**
	Education Percentage	.36	.75	.56	4.67**

*Statistically significant, $p < .05$
**Statistically significant, $p < .01$

two variables and their effect on FTE growth analyzed, the following results were obtained:

Table 2

Institution Parameters	FTE Growth Mean	SD	N	t
ASP ≥ 30%	20%	42	18	
ASP < 30%	5%	15	18	1.42
EP ≥ 25%	15%	47	15*	
EP < 25%	10%	15	14*	.38
ASP ≥ 30% and EP ≥ 25%	28%	61	8*	
All others	7%	18	19*	.98

*The eight junior colleges were not included.

Private colleges which in 1974 drew 30 percent or more of their student body from their own or adjacent counties experienced a 20 percent mean percentage increase in FTE over the next five years as compared to a five percent mean FTE percentage increase over the same period for those institutions with less than 30 percent of their students from the surrounding area. Institutions which awarded 25 percent or more of their degrees in education in 1974 reported a 15 percent mean percentage increase in FTE enrollment over 1974-79, as compared to a 10 percent increase for those institutions graduating less than 25 percent of their students in education. Those private colleges which reported both of these characteristics in 1974, greater than 30 percent of their students from the surrounding area and greater than 25 percent of their graduates in education, experienced a 28 percent FTE percentage increase over the

next five years, as compared to a seven percent increase for the other North Carolina private schools (excluding the junior colleges). Although none of these differences were statistically significant, they are noteworthy.

Area population, education growth, education percentage, race and out-of-state growth were the best predictors of application growth, explaining 44 percent of the variation in the dependent variable. All of the simple correlations were positive and the dummy race variable indicated a positive relationship between predominantly white institutions and application growth.

The two best predictors of application growth were area population (AP) and education growth (EG). These two variables accounted for 27 percent of the variation in application growth. When the institutions were grouped on the basis of area population and education growth to determine application growth the following results were obtained:

Table 3

Institution Parameters	Application Growth Mean	SD	N	t
AP ≥ 600,000	42%	57	17	
AP < 600,000	15%	44	19	1.60
EG ≥ 0%	38%	53	13*	
EG < 0%	32%	61	14*	.25
AP ≥ 600,000 and EG ≥ 0%	40%	42	7	
All others	33%	61	20	.28

*The eight junior colleges were not included.

Those private institutions located in population areas (county and adjacent counties) of 600,000 or more in 1974 exhibited mean application percentage increases of 42 percent from 1974 to 1979, as compared to 15 percent increases for institutions in areas of less population. Institutions which reported growth in the percentage of education graduates from 1974 to 1979 exhibited a 38 percent mean percentage increase in applications over the past five years, as compared to a mean increase of 32 percent for those institutions with education degree percentage declines. Institutions which exhibited both characteristics, located in population areas of greater than 600,000 in 1974 and experiencing growth in the percentage of education graduates from 1974 to 1979, reported a 40 percent mean percentage increase in application growth, as compared to 33 percent for the remaining institutions. None of these differences were statistically significant.

Religious relationship (United Methodist), institution age, education growth, area population, and institutional size were the best predictors of freshman enrollment growth accounting for 41 percent of the variation in the dependent variable. The nominal variable religious relationship was entered in the regression equation by dummy variables and indicated a positive correlation between United Methodist institutions and application growth. The institution age and institution size relationships were inverse.

Thirty-two percent of the variation in freshman enrollment growth was accounted for by religious relationship and institution age (AGE). The grouping of the institutions on these two variables resulted in the following:

Table 4

Institution Parameters	Freshman Enrollment Growth Mean	SD	N	t
United Methodist Schools	58%	84	9	
All others	7%	23	29	1.81
AGE ≥ 100	13%	25	21	
AGE < 100	27%	68	17	-.93
Methodist Schools with AGE < 100	91%	124	4	
All others	11%	25	34	1.30

The United Methodist schools reported a 58 percent mean percentage increase in freshman enrollment, as compared to seven percent for the remainder of the state's private schools. Institutions founded less than 100 years ago exhibited a 27 percent mean percentage increase in freshman enrollment, as compared to 13 percent for the older institutions. Combination of these two factors, United Methodist institutions founded within the past 100 years, resulted in a mean freshman enrollment growth of 91 percent from 1974-79, as compared to 11 percent for the remaining institutions. No differences were statistically significant.

The regression analysis of the dependent variable SAT gain produced no statistically significant multiple correlations. The five best predictors accounted for only 32 percent of the variation in SAT gain.

Education growth, out-of-state percentage, UNC proximity, religious relationship and education percentage were the best predictors of high school rank. The multiple r of .75 accounted for 56 percent of the variation in high school rank. All of the simple correlations were inverse except education percentage.

Thirty-five percent of the variation in the dependent variable was accounted for by education growth (EG) and out-of-state percentage (OSP). Further examination of these two variables revealed the following data:

Table 5

Institution Parameters	High School Rank			
	Mean	SD	N	t
EG ≥ 0	-4%	11	11*	
EG < 0	3%	11	13*	-1.66
OSP ≥ 35%	0%	11	13	
OSP < 35%	4%	12	15	-.74
EG < 0 and OSP < 35%	5%	8	5*	
All others	-2%	12	17*	1.12

*The eight junior colleges were not included.

The institutions which reported growth in the percentage of degrees awarded in education from 1974-79 exhibited a four percent mean decline in the percentage of enrolled first-time freshmen from the top 40 percent of their high school classes. Those schools with at least 35 percent out-of-state students in 1974, reported no mean growth in the percentage of enrolled first-time freshmen from the top 40 percent of their high school classes. Schools with no growth in the percentage of education degrees awarded and less than 35 percent out-of-state students in 1974, reported a five percent increase in the number of enrolled freshmen from the top 40 percent of their high school classes, as compared to a two percent mean decline for all other private institutions.

CONCLUSIONS

1. Private institutions located in large population areas (600,000 or more) have experienced a greater increase in freshman applications than those private institutions located in less populated areas.

2. Those institutions which drew a larger percentage of their students from the surrounding area have experienced larger FTE enrollment increases than those institutions which did not.

3. Institutions which enrolled a larger percentage of students in education have experienced an increase in applications and enrollments. The quality of the students enrolled, however, has declined.

4. The student quality of institutions which enrolled larger percentages of out-of-state students has declined.

5. The institutions related to the United Methodist Church have exhibited relative increases in freshman enrollments.

6. The newer institutions reported larger percentage increases in freshman enrollments than did older institutions.

IMPLICATIONS

The finding of increased applications in areas of greater population supports the predictions of the Carnegie Council on Policy Studies in Higher Education. Private institutions located in small towns and rural areas may anticipate difficulty in attracting and enrolling students over the next two decades. Private institutions, particularily the less selective liberal arts colleges, should make a concerted effort to recruit students from their surrounding areas and exert less effort in recruiting out-of-state students.

Contrary to the predictions of the Carnegie Council, this study found increased enrollments and applications in institutions with increasing percentage enrollments in education. However, private institutions which rely on large numbers of education majors for enrollments are attracting less able students.

The Carnegie Council on Policy Studies in Higher Education suggested in its final report that certain Protestant colleges in the South might be immune from the influence of demographic factors [5]. This appears to be the case with the United Methodist institutions in North Carolina.

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